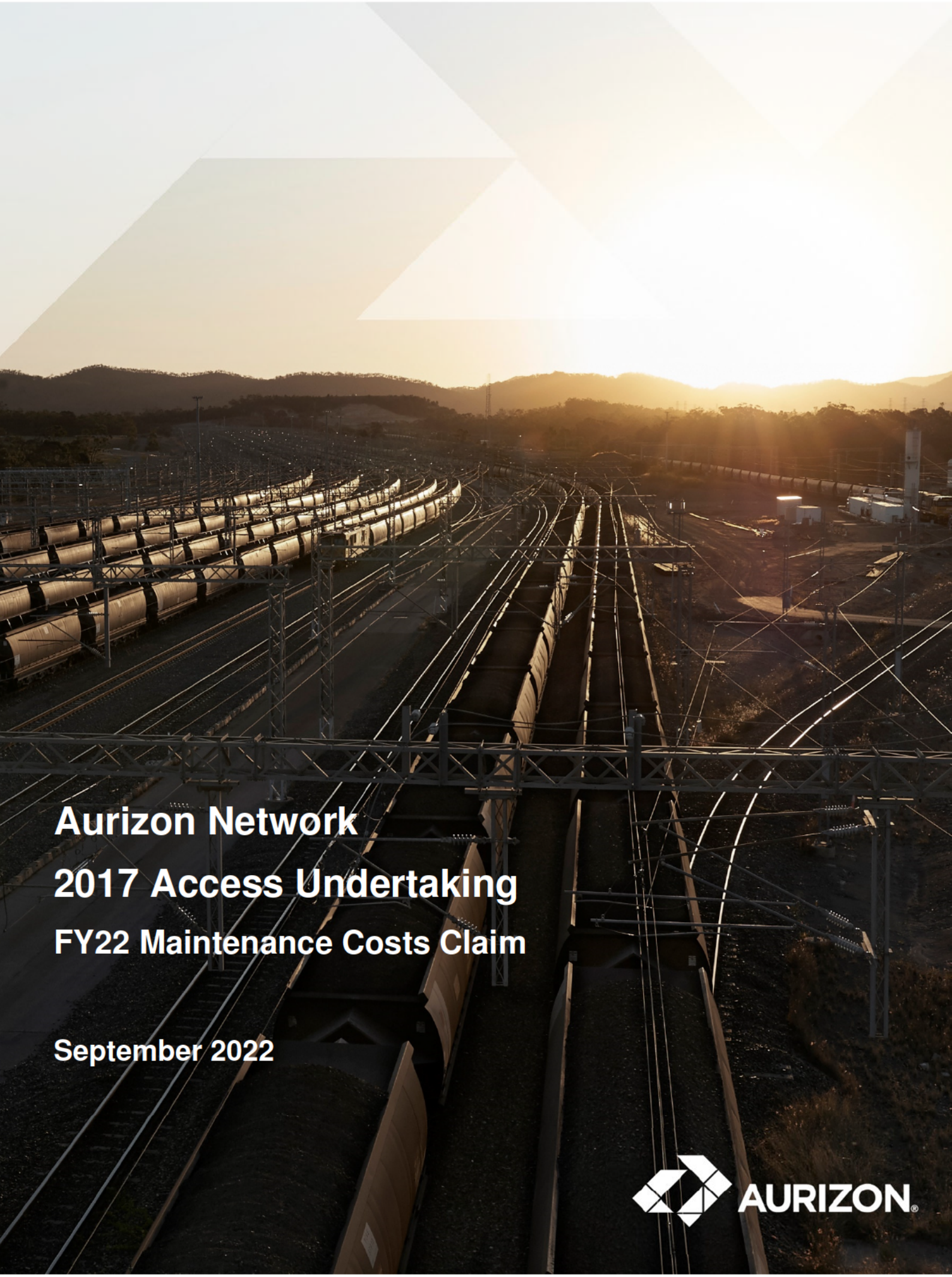

Aurizon Network
2017 Access Undertaking
FY22 Maintenance Costs Claim

September 2022

AURIZON

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1. Executive Summary

1.1 Overview

Aurizon Network Pty Ltd (**Aurizon Network**) is the accredited Rail Infrastructure Manager (**RIM**) of the Central Queensland Coal Network (**CQCN**), the largest open-access coal rail network in Australia and one of the country's most complex rail freight networks. The CQCN is comprised of over 2,670 kilometres of heavy haul railway track, linking more than forty mines to five coal export terminals across four major Coal Systems and the Goonyella to Abbot Point Expansion (**GAPE**).

Third party access to the CQCN is regulated by the Queensland Competition Authority (**QCA**) and managed in accordance with Aurizon Network's 2017 Access Undertaking (**UT5**). UT5 provides for customer involvement in the development and assessment of Aurizon Network's Maintenance and Renewal Strategies and Budgets (**MRSB**) for each year and for each Coal System.

Following consultation with stakeholders and the Rail Industry Group (**RIG**), Aurizon Network's final draft MRSB for the Financial Year ending 30 June 2022 (**FY22**) was provided to the Chair of the Rail Industry Group (**RIG**) on 21 January 2021. On 14 February 2021, the Chair of the RIG advised Aurizon Network and the QCA that the relevant Special Majority of End Users had approved the FY22 Maintenance Strategies and Budgets (**MSB**) for Blackwater, Goonyella, Moura and GAPE, but had not approved the FY22 MSB for the Newlands Coal System. On 3 March 2021, Aurizon Network submitted the FY22 MSB for the Newlands Coal System to the QCA for approval, which was subsequently granted on 26 May 2021.

During FY22, Aurizon Network has implemented the approved MSB for each Coal System and confirms that the CQCN maintenance program has been delivered having regard to the UT5 Maintenance Objectives (**Maintenance Objectives**). Specifically:

- Seeking to ensure that Committed Capacity is delivered;
- Appropriately balancing cost, reliability, and performance of the Rail Infrastructure; and
- Coordinating outages with other Supply Chain Participants wherever reasonably possible with a view to maximising throughput.

In doing so, Aurizon Network notes that some minor cost and scope variances do exist in comparison to the approved MSB for each Coal System. It should be noted that when developing the approved MSB, Aurizon Network is required to forecast maintenance scope and cost up to 18-months in advance of execution. A degree of variation is expected due to the dynamic nature of linear heavy haul Rail Infrastructure in which asset condition and criticality can change due to normal railway operations, environmental factors and relative degradation rates.

1.2 FY22 Maintenance Costs Claim

Aurizon Network submits for QCA approval, its actual Direct Maintenance Costs incurred (**Maintenance Costs Claim**) for FY22. This Maintenance Costs Claim is consistent with the summary of FY22 maintenance costs that Aurizon Network provided to Customers on:

- 1 August 2022 as part of the RIG quarterly report for FY22 Q4; and
- 9 August 2022 as part of the Customer Quarterly Forum.

The FY22 MSB provided a total maintenance budget of $151.1m for the CQCN overall. During FY22, Aurizon Network incurred total Direct Maintenance Costs of $155.8m for the CQCN in aggregate. Noting that the FY22 MSB provided maintenance budgets for coal traffic only, Aurizon Network has calculated an allocation of costs to non-coal train services and has deducted these amounts from the FY22 Maintenance Costs Claim. The overall value of Aurizon Network's FY22 Maintenance Cost Claim for the CQCN is $154.1m. These amounts are presented for each Coal System in Table 1.

Table 1 FY22 Maintenance Costs Incurred by Coal System

System	Approved MSB ($m)	Maintenance Costs Incurred ($m)	Deduction for Non-Coal ($m)	Maintenance Cost Claim ($m)
Blackwater	65.0	67.4	(1.3)	66.1
Goonyella	61.1	62.6	(0.1)	62.5
Moura	12.4	12.4	(0.2)	12.2
Newlands / GAPE	12.6	13.3	(0.0)	13.3
Total	**151.1**	**155.8**	**(1.6)**	**154.1**

Aurizon Network considers that the FY22 Maintenance Cost Claim for each Coal System meets the requirements of clause 7A.11.5(f) of UT5, and as a result, is consistent with the Approved Maintenance Strategy and Budget. Aurizon Network confirms that there are no items within the Maintenance Costs Claim for a Coal System that differ in a material respect (i.e. exceeding +/- $2m) when compared to the corresponding item in the Approved Maintenance Strategy and Budget. Consequently, Aurizon Network considers that the QCA should approve the Maintenance Costs Claim for each Coal System.

1.3 Form of Submission

This submission outlines all matters that are relevant to the Maintenance Cost Claim and is structured as follows:

Section 2	Provides an overview of the Regulatory Process relevant to the QCA's assessment of Aurizon Network's Maintenance Costs Claim;
Section 3	Blackwater System Maintenance Cost Claim
Section 4	Goonyella System Maintenance Cost Claim
Section 5	Moura System Maintenance Cost Claim
Section 6	Newlands System and GAPE Maintenance Cost Claim
Section 7	Provides an overview of how Aurizon Network has sought to promote the UT5 Maintenance Objectives;
Section 8	Provides an overview of the procurement strategy and methodology used by Aurizon Network with respect to the Maintenance Work.

Unless otherwise defined, capitalised terms in this submission have the meaning given in UT5. Aurizon Network has prepared detailed financial models (**the Models**) in support of this submission and has provided these to QCA staff in electronic form. The Models contain Confidential Information relating to individual Train Services and accordingly Aurizon Network requests that the Models are not published.

Please note that the tables included within this submission may not add due to rounding.

2. Overview of the Regulatory Process

Clause 7A.11.3 of UT5 provides a process through which Aurizon Network can seek pre-approval of its MSB for a Coal System for a Year. Upon approval of the MSB for each Coal System (either by a Special Majority of End Users via the RIG process or by the QCA), Aurizon Network will:

- give effect to the MSB for each Coal System by setting a forecast Maintenance Indicator for the forthcoming financial year as part of the Annual review of Reference Tariffs process (Clause 4 of Schedule F to UT5); and
- implement the approved MSB for each Coal System during the year.

Following the end of each financial year, Aurizon Network will submit its Maintenance Costs Claim to the QCA for approval in accordance with Clause 7A.11.5.

2.1 QCA assessment of the Maintenance Costs Claim

As outlined in clause 7A.11.5(f) of UT5, the QCA will determine the extent to which Aurizon Network's Maintenance Costs Claim is consistent with the Approved MSB for each Coal System, having regard to a materiality threshold of +/- $2 million for a maintenance 'item'.

In this context, the term 'item' is not defined within UT5. As part of the FY21 MRSB process, it was agreed with the RIG that for the purpose of the QCA's assessment under clause 7A.11.5(f)(ii) of UT5, a maintenance 'item' is:

- For Blackwater and Goonyella, the product areas of Resurfacing, Rail Grinding, General Track Maintenance, 'Signalling and Telecoms' and Electrical should be considered as individual items. The remaining product areas should be considered a single item (Structures and Facilities, Trackside Systems, Other Civil Maintenance, Other General Maintenance); and
- For Moura and Newlands/GAPE, the maintenance budget in its entirety, should be considered an 'item'.

2.1.1 QCA process where there is no material difference

As specified in clause 7A.11.5(f)(i) to 7A.11.5(f)(ii)(A), where the Maintenance Costs Claim is consistent with the Approved MSB:

- End Users are deemed to support the relevant elements of the Maintenance Costs Claim; and
- the QCA will approve the Maintenance Costs Claim.

2.1.2 Approval process where a material difference exists

Where there is a difference in a material respect, the QCA will consider any item:

- which is at least $2 million more than the corresponding item in the Approved MSB for a Coal System;
- which is at least $2 million less than the corresponding item in the Approved MSB for a Coal System; or
- in the Approved MSB which has a value of at least $2 million and which Aurizon Network has failed to undertake.

Members of the RIG may make submissions to the QCA to the extent the Maintenance Cost claim differs in a material respect from a Coal System's Approved MSB.

The QCA must approve costs that are different in a material respect to the extent those costs are prudent and efficient. In making its determination, the QCA may have regard to the Maintenance Objectives, which are outlined in Clause 7A.11.1(a)(iii)(A)-(C) and in section 1.1 above.

2.2 Reconciliation of approved maintenance costs

To the extent that the actual maintenance costs approved by the QCA under clause 7A.11.5 differs from the amounts recovered through Allowable Revenues and Reference Tariffs during the year, the Revenue Adjustment Amounts (Revenue Cap) process includes an adjustment under Schedule F, Clause 4.3 (c)(ii) to reconcile that difference.

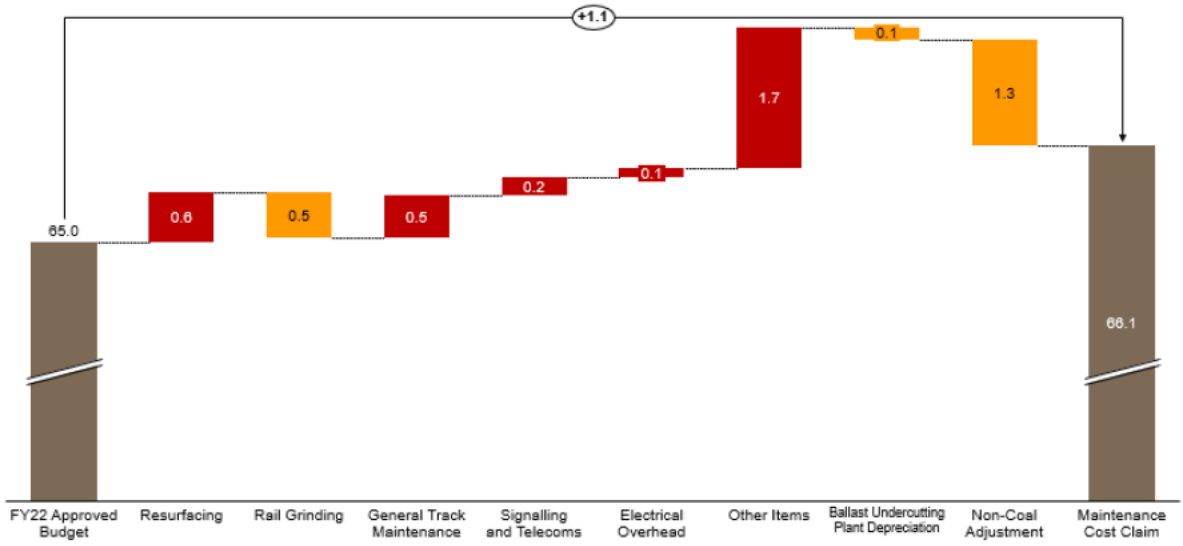
3. Blackwater System Maintenance Costs Claim

This section outlines the actual Direct Maintenance Costs that Aurizon Network incurred during FY22 in delivering Maintenance Work in the Blackwater System.

3.1 Direct Maintenance Cost Performance

Aurizon Network submits for QCA approval, a Maintenance Cost Claim of $66.1m, which in aggregate is $1.1m higher than the approved maintenance budget of $65.0m for this Coal System. This variance was driven by additional Resurfacing, General Track Maintenance, and the combined impact of other 'minor' maintenance activities. Increases in these maintenance items were partially offset by lower rail grinding costs.

Figure 1 Blackwater System Maintenance Costs Incurred ($m)



Aurizon Network has assessed its actual maintenance costs incurred against the Approved MSB, taking into consideration the materiality thresholds specified in UT5, 7A.11.5(f)(ii)(B).

Table 2 Maintenance cost materiality thresholds

Legend:	
Consistent	Variation from Approved MSB is within +/- $2m materiality threshold.
Departed	Variation from Approved MSB exceeds +/- $2m materiality threshold.

The following table outlines whether Aurizon Network has remained consistent with or has departed from the approved MSB. In assessing the Maintenance Costs Claim (as per clause 7A.11.5), the QCA should have regard to the maintenance items, represented by the shaded rows in Table 3 below.

Table 3 Blackwater System Maintenance Costs – Comparison to Approved Budget ($m)

Maintenance Item ($m)	Maintenance Costs Incurred	Approved Budget	Cost Variance	Consistent or Departed
Resurfacing	**9.3**	**8.7**	**0.6**	
Mainline	7.8	6.9		
Turnout	1.4	1.8		

Maintenance Item ($m)	Maintenance Costs Incurred	Approved Budget	Cost Variance	Consistent or Departed
Rail Grinding	**7.5**	**8.0**	**(0.6)**	
Mainline	[redacted]	[redacted]		
Turnout	[redacted]	[redacted]		
General Track Maintenance	**22.5**	**22.0**	**0.5**	
General Track	21.1	20.0		
Track Recording	0.9	1.2		
Ultrasonic Testing	0.5	0.8		
Signalling and Telecoms	**10.1**	**9.9**	**0.2**	
Signalling Corrective	2.8	2.4		
Signalling Preventative	4.8	5.3		
Telecoms Corrective	0.3	0.6		
Telecoms Preventative	2.2	1.6		
Electrical	**6.2**	**6.1**	**0.1**	
OHLE Corrective	2.0	1.6		
OHLE Preventative	2.5	3.1		
Power Systems Corrective	0.8	0.4		
Power Systems Preventative	0.9	1.0		
Other Items	**9.0**	**7.3**	**1.7**	
Structures and Facilities	2.2	1.9		
Trackside Systems	1.1	0.8		
Other Civil Maintenance	2.8	2.4		
Other General Maintenance	2.9	2.3		
Sub-Total	**64.6**	**62.0**	**2.6**	
Ballast Undercutting Plant Depreciation	2.9	3.0	(0.1)	
Non-Coal Adjustment	(1.3)	--	(1.3)	
Maintenance Cost Claim	**66.1**	**65.0**	**1.1**	

3.2 Scope of Maintenance Work Undertaken

This section outlines the scope of Maintenance Work undertaken in the Blackwater Coal System during FY22.

Table 4 Blackwater System Scope Delivered

Maintenance Item	Scope Delivered	RIG Approved Scope	Scope Variance	% Variance
Resurfacing				
Mainline	875	896	(21)	-2%
Turnout	176	173	3	2%
Rail Grinding				

Maintenance Item	Scope Delivered	RIG Approved Scope	Scope Variance	% Variance
Mainline	[redacted]	[redacted]	[redacted]	[redacted]
Turnout	[redacted]	[redacted]	[redacted]	[redacted]
General Track Maintenance				
Track Recording	2,581	2,588	(7)	-0.3%
Ultrasonic Testing	5,464	5,483	(19)	-0.3%

3.3 Commentary on Maintenance Items

Aurizon Network has delivered Maintenance Work in the Blackwater System in a manner that is consistent with its legislative and regulatory obligations. By giving effect to the asset management plans and strategies[1] that underpinned the approved MSB, Aurizon Network has ensured compliance with these obligations.

There are no categories of maintenance within Aurizon Network's Maintenance Costs Claim for the Blackwater System, with a difference in a material respect when compared to the corresponding item in the approved MSB. Consequently, Aurizon Network considers that the QCA should approve the Blackwater Maintenance Costs Claim.

Aurizon Network has provided some commentary on specific maintenance categories below.

3.3.1 Resurfacing

Full year resurfacing scope of works was broadly in line with the approved MSB.

- 875km of mainline resurfacing scope was completed during the year, which was 21km (-2%) lower than the approved MSB; and
- 176 turnouts were resurfaced during the year, which was 2 (+2%) more than the approved MSB.

Overall, resurfacing costs were $0.6m (6%) higher than budget as a result of shorter possession windows, meaning that additional shifts were required to deliver scope than were budgeted. The resurfacing program was impacted by wet weather during the year, and by reducing the length of possessions, Aurizon Network sought to minimise the impact to train services when delivering this maintenance activity.

3.3.2 Rail Grinding

During FY22:

- [redacted]km of mainline rail grinding was completed, [redacted]km [redacted]) lower than the approved MSB; and
- rail grinding was completed on [redacted] turnouts, [redacted] ([redacted]) more than the approved MSB.

The shortfall in mainline rail grinding scope was the result of wet weather in March 2022. Consequently, Rail Grinding costs were $0.6m (-7%) lower than budget.

[1] The asset management plans and strategies are derived from Aurizon Network's Asset Maintenance and Renewal Policy, which in turn is the manifestation of Aurizon Network's practical application of the Safety Management System.

3.3.3 General Track Maintenance

Aurizon Network incurred $22.5m for General Track Maintenance in the Blackwater System, which exceeded the approved MSB by $0.5m (+2%) in aggregate. This result was attributable to the completion of planned corrective works at the Koorilgah loop and implementation of changes to the Gracemere rostering practices, which now provides 7-day coverage. This was offset by a reduction in Rail Repair activities across all districts. Rail renewals in prior years have had a positive impact on maintenance effort, reducing the number of corrective activities required. Additionally, track recording and ultrasonic testing were below budget allocation for additional shifts and travel not required.

3.3.4 Signalling and Telecoms

Aurizon Network incurred $10.1m in signalling and telecoms maintenance costs; representing an overspend of $0.2m (+2%) in aggregate when compared to the approved MSB. This outcome was attributable to an increase in corrective maintenance spend following significant wet weather experienced in FY22 Q2 and Q3.

3.3.5 Electrical

Aurizon Network incurred $6.2m in electrical maintenance costs; representing an over-spend of $0.1m (1%) in aggregate when compared to the approved MSB. The slight overspend was attributable to the impact of significant wet weather in FY22 Q2 and Q3 and work undertaken at Straun Road feeder station, resulting in an increase in corrective maintenance spend.

3.3.6 Other Items

- Structures and Facilities Maintenance - Aurizon Network incurred $2.2m in structures and facilities maintenance, representing an over-spend of $0.4m when compared to the approved MSB. The over-spend was attributable to increased concrete repairs, additional corrugated metal pipe paint protection, concrete invert linings, concrete causeway defects and additional scour repairs.
- Trackside Systems - full year spend in FY22 was $0.3m above approved MSB and driven by corrective maintenance required at Kalapa Mainline Weighbridge.
- Other Civil Maintenance - full year spend in FY22 exceeded the approved MSB by $0.4m. This was driven by significant wet weather impacts, and the completion of restressing activities to ensure alignment to Civil Engineering Track Standards. Costs associated with these restressing activities were not provided for in the approved MSB.
- Other General Maintenance - Aurizon Network's full year spend was $0.6m above the approved MSB, and attributable to additional on call availability in response to significant wet weather impacts in FY22 Q2 and Q3.

3.3.7 Ballast Undercutting Plant Depreciation

Ballast undercutting plant depreciation was $2.9m, which was $0.1m lower than the approved MSB. The allocation of ballast undercutting plant depreciation between Coal Systems is aligned to scope delivery for the year.

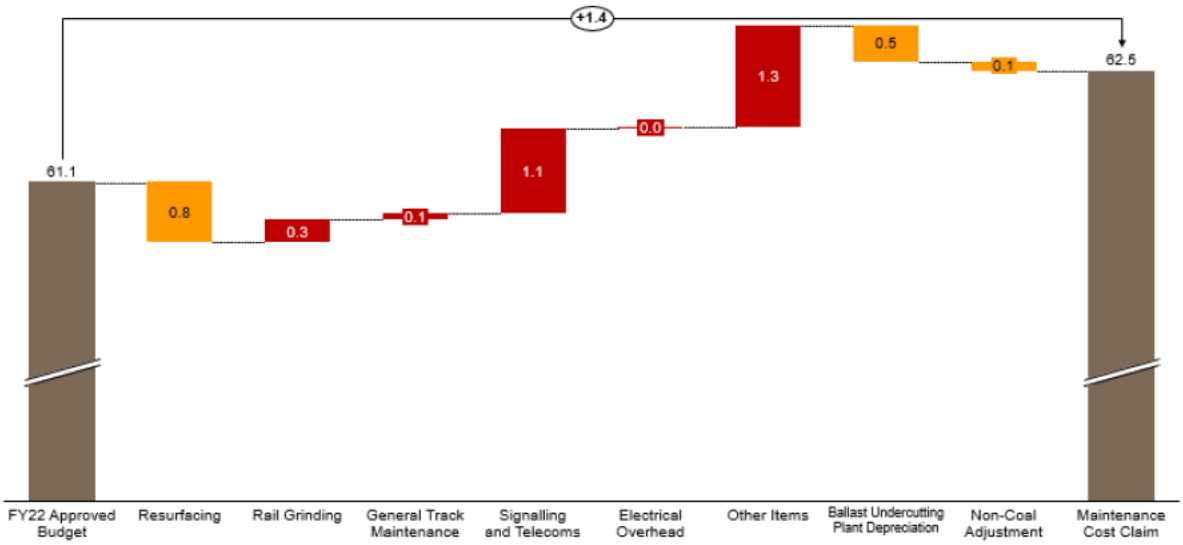
4. Goonyella System Maintenance Costs Claim

This section outlines the actual Direct Maintenance Costs that Aurizon Network incurred during FY22 in delivering Maintenance Work in the Goonyella System.

4.1 Direct Maintenance Cost Performance

Aurizon Network submits for QCA approval, a Maintenance Cost Claim of $62.5m, which in aggregate is $1.4m higher than the approved maintenance budget of $61.1m for this Coal System. This variance was primarily driven by additional Signalling and Telecoms maintenance and the combined impact of other 'minor' maintenance activities. The increases in these items were partially offset by lower resurfacing costs.

Figure 2 Goonyella System Maintenance Costs Incurred ($m)



Aurizon Network has assessed its actual maintenance costs incurred against the Approved MSB, taking into consideration the materiality thresholds specified in UT5, 7A.11.5(f)(ii)(B).

Table 5 Maintenance cost materiality thresholds

Legend:	
Consistent	Variation from Approved MSB is within +/- $2m materiality threshold.
Departed	Variation from Approved MSB exceeds +/- $2m materiality threshold.

The following table outlines whether Aurizon Network has remained consistent with or has departed from the approved MSB. In assessing the Maintenance Costs Claim (as per clause 7A.11.5), the QCA should have regard to the maintenance items, represented by the shaded rows in Table 6 below.

Table 6 Goonyella System Maintenance Costs – Comparison to Approved Budget ($m)

Maintenance Item ($m)	Maintenance Costs Incurred	Approved Budget	Cost Variance	Consistent or Departed
Resurfacing	**8.5**	**9.3**	**(0.8)**	
Mainline	6.9	7.4		
Turnout	1.6	1.9		

Maintenance Item ($m)	Maintenance Costs Incurred	Approved Budget	Cost Variance	Consistent or Departed
Rail Grinding	**8.8**	**8.5**	**0.3**	
Mainline	[redacted]	[redacted]		
Turnout	[redacted]	[redacted]		
General Track Maintenance	**16.4**	**16.3**	**0.1**	
General Track	14.9	14.8		
Track Recording	0.9	0.9		
Ultrasonic Testing	0.6	0.6		
Signalling and Telecoms	**10.8**	**9.7**	**1.1**	
Signalling Corrective	3.4	3.0		
Signalling Preventative	4.3	5.0		
Telecoms Corrective	0.3	0.2		
Telecoms Preventative	2.7	1.5		
Electrical	**6.1**	**6.1**	**0.0**	
OHLE Corrective	2.6	2.0		
OHLE Preventative	2.1	2.3		
Power Systems Corrective	0.5	0.3		
Power Systems Preventative	0.9	1.5		
Other Items	**9.4**	**8.1**	**1.3**	
Structures and Facilities	1.8	1.7		
Trackside Systems	1.4	1.7		
Other Civil Maintenance	3.8	2.6		
Other General Maintenance	2.4	2.2		
Sub-Total	**60.0**	**58.0**	**2.0**	
Ballast Undercutting Plant Depreciation	2.6	3.1	(0.5)	
Non-Coal Adjustment	(0.1)	--	(0.1)	
Maintenance Cost Claim	**62.5**	**61.1**	**1.4**	

4.2 Scope of Maintenance Work Undertaken

This section outlines the scope of Maintenance Work undertaken in the Goonyella Coal System during FY22.

Table 7 Goonyella System Scope Delivered

Maintenance Item	Scope Delivered	RIG Approved Scope	Scope Variance	% Variance
Resurfacing				
- Mainline	921	956	(35)	-4%
- Turnout	194	189	5	3%

Maintenance Item	Scope Delivered	RIG Approved Scope	Scope Variance	% Variance
Rail Grinding				
- Mainline	[redacted]	[redacted]	[redacted]	[redacted]
- Turnout	[redacted]	[redacted]	[redacted]	[redacted]
General Track Maintenance				
- Track Recording	1,920	1,809	111	6%
- Ultrasonic Testing	5,256	5,216	40	1%

4.3 Commentary on annual performance for Maintenance Items

Aurizon Network has delivered Maintenance Work in the Goonyella System in a manner that is consistent with its legislative and regulatory obligations. By giving effect to the asset management plans and strategies[2] that underpinned the approved MSB, Aurizon Network has ensured compliance with these obligations.

There are no categories of maintenance within Aurizon Network's Maintenance Costs Claim for the Goonyella System, with a difference in a material respect when compared to the corresponding item in the approved MSB. Consequently, Aurizon Network considers that the QCA should approve the Goonyella Maintenance Costs Claim.

Aurizon Network has provided some commentary on specific maintenance categories below.

4.3.1 Resurfacing

Full year resurfacing scope was delivered materially in line with the approved MSB. Aurizon Network:

- delivered 921km of mainline resurfacing scope, which was 35km lower (-4%) than the approved MSB of 956km; and
- resurfaced 194 turnouts, 5 more (+3%) than the approved MSB of 189 turnouts.

Aurizon Network's total costs for the year were $0.8m (8%) lower than the approved MSB of $9.3m. During the year, Aurizon Network's resources were focussed on rectifying high impact TSRs. Savings in the resurfacing program were also achieved by executing works during system and branch closures, allowing the scope to be completed in less time and at a lower cost.

4.3.2 Rail Grinding

Full year rail grinding scope was delivered materially in line with the approved MSB.

- [redacted]km of mainline rail grinding was completed; an additional [redacted] km ([redacted]); and
- rail grinding was completed on [redacted] turnouts; [redacted] fewer [redacted]) than the MSB.

Overall rail grinding spend was $0.3m (+3%) higher than the approved MSB, driven by the additional mainline scope km completed.

[2] The asset management plans and strategies are derived from Aurizon Network's Asset Maintenance and Renewal Policy, which in turn is the manifestation of Aurizon Network's practical application of the Safety Management System.

4.3.3 General Track Maintenance

Aurizon Network incurred costs materially in line with the approved MSB for General Track Maintenance; representing an over-spend of $0.1m (+0.5%) in aggregate. The increase in spend was driven by repairs to critical access roads and drainage. This has been partly offset by the part internalisation of fire and vegetation management activities and reduced rail repair activities. Rail renewals in prior years have had a positive impact on maintenance requirements, reducing the number of corrective activities required.

4.3.4 Signalling and Telecoms

Aurizon Network incurred $10.8m in signalling and telecoms maintenance costs; representing an over-spend of $1.1m (+11%) when compared to the approved MSB. The additional spend for this item was predominately driven by impacts of significant wet weather experienced in FY22 Q2 & Q3, which caused an increase in corrective maintenance activities of approximately $0.4m. Additional spend for Telecoms preventative maintenance was also required due to higher than budgeted contractor costs.

4.3.5 Electrical

Electrical maintenance expenditure for the year was in line with the approved MSB.

4.3.6 Other Items

Spend on Structures and Facilities, Trackside Systems and Other General Maintenance was in line with the MSB in aggregate.

Aurizon Network incurred $3.8m in Other Civil Maintenance, representing a variance of $1.2m when compared to the approved MSB. This was driven by significant wet weather impacts, and the completion of restressing activities (which were not provided for in the approved MSB) to ensure alignment to Civil Engineering Track Standards.

4.3.7 Ballast Undercutting Plant Depreciation

Ballast undercutting plant depreciation was $2.6m, which was $0.5m lower than the approved MSB. The allocation of ballast undercutting plant depreciation between Coal Systems is aligned to scope delivery for the year.

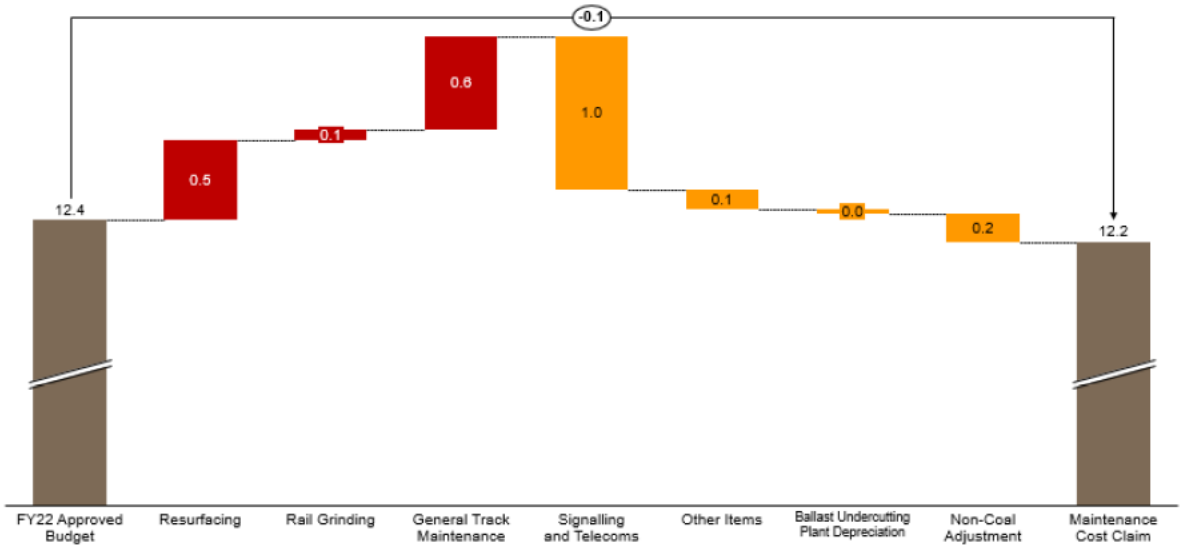
5. Moura System Maintenance Costs Claim

This section outlines the actual Direct Maintenance Costs that Aurizon Network incurred during FY22 in delivering Maintenance Work in the Moura System.

5.1 Direct Maintenance Cost Performance

Aurizon Network submits for QCA approval, a Maintenance Cost Claim of $12.2m, which in aggregate is $0.1m lower than the approved maintenance budget of $12.4m for this Coal System. This variance was primarily driven by additional Resurfacing and General Track Maintenance costs, which were partially offset by lower Signalling and Telecoms costs.

Figure 3 Moura System Maintenance Costs Incurred ($m)



Aurizon Network has assessed its actual maintenance costs incurred against the Approved MSB, taking into consideration the materiality thresholds specified in UT5, 7A.11.5(f)(ii)(B).

Table 8 Maintenance cost materiality thresholds

Legend:	
Consistent	Variation from Approved MSB is within +/- $2m materiality threshold.
Departed	Variation from Approved MSB exceeds +/- $2m materiality threshold.

The following table outlines whether Aurizon Network has remained consistent with or has departed from the approved MSB. In assessing the Maintenance Costs Claim (as per clause 7A.11.5) for the Moura System, the QCA should have regard to the total maintenance budget in aggregate, as outlined in Table 9 below.

Table 9 Moura System Maintenance Costs – Comparison to Approved Budget ($m)

Maintenance Item ($m)	Maintenance Costs Incurred	Approved Budget	Cost Variance	Consistent or Departed
Resurfacing	**1.9**	**1.4**	**0.5**	
Mainline	1.8	1.3		
Turnout	0.1	0.1		

Maintenance Item ($m)	Maintenance Costs Incurred	Approved Budget	Cost Variance	Consistent or Departed
Rail Grinding	**0.8**	**0.7**	**0.1**	
Mainline	[redacted]	[redacted]		
Turnout	[redacted]	[redacted]		
General Track Maintenance	**5.6**	**5.0**	**0.6**	
General Track	5.4	4.7		
Track Recording	0.2	0.3		
Ultrasonic Testing	0.0	0.1		
Signalling and Telecoms	**2.0**	**3.0**	**(1.0)**	
Signalling Corrective	0.7	0.8		
Signalling Preventative	0.9	1.4		
Telecoms Corrective	0.1	0.2		
Telecoms Preventative	0.3	0.5		
Other Items	**2.0**	**2.1**	**(0.1)**	
Structures and Facilities	0.7	0.6		
Trackside Systems	0.3	0.3		
Other Civil Maintenance	0.8	0.9		
Other General Maintenance	0.2	0.3		
Sub-Total	**12.3**	**12.3**	**0.1**	
Ballast Undercutting Plant Depreciation	0.1	0.1	(0.0)	
Non-Coal Adjustment	(0.2)	--	(0.2)	
Maintenance Cost Claim	**12.2**	**12.4**	**(0.1)**	

5.2 Scope of Maintenance Work Undertaken

This section outlines the scope of Maintenance Work undertaken in the Moura Coal System during FY22.

Table 10 Moura System Scope Delivered

Maintenance Item	Scope Delivered	RIG Approved Scope	Scope Variance	% Variance
Resurfacing				
- Mainline	195	170	25	15%
- Turnout	10	10	--	0%
Rail Grinding				
- Mainline	[redacted]	[redacted]	[redacted]	[redacted]
- Turnout	[redacted]	[redacted]	[redacted]	[redacted]
General Track Maintenance				
- Track Recording	509	514	(5)	-1%
- Ultrasonic Testing	309	373	(64)	-17%

5.3 Commentary on annual performance for Maintenance Items

Aurizon Network has delivered Maintenance Work in the Moura System in a manner that is consistent with its legislative and regulatory obligations. By giving effect to the asset management plans and strategies[3] that underpinned the approved MSB, Aurizon Network has ensured compliance with these obligations.

There are no categories of maintenance within Aurizon Network's Maintenance Costs Claim for the Moura System, with a difference in a material respect when compared to the corresponding item in the approved MSB. Consequently, Aurizon Network considers that the QCA should approve the Moura Maintenance Costs Claim.

Aurizon Network has provided some commentary on specific maintenance categories below.

5.3.1 Resurfacing

Aurizon Network delivered the resurfacing scope of works as outlined in the approved MSB. Scope completed for:

- Mainline resurfacing was higher than the approved MSB with 195km completed. This represents an additional 25km (+15%); and
- Turnout resurfacing was in line with the approved MSB. 10 turnouts were completed, representing an additional 13 turnouts (+8%).

The additional scope was completed to rectify defects in locations that were impacted by speed restrictions. Double and triple tamping was also required in some locations to return the track to the required standard. These factors saw resurfacing costs exceed the approved budget by $0.5m (+4%) in aggregate.

5.3.2 Rail Grinding

The scope of rail grinding works delivered was materially in line with the approved MSB.

- [redacted]km of mainline rail grinding was completed; an additional [redacted] km [redacted]); and
- rail grinding was completed on [redacted] turnouts; [redacted] fewer ([redacted]) than the approved MSB.

Total rail grinding costs incurred were $0.1m higher than budget.

5.3.3 General Track Maintenance

Aurizon Network incurred costs in excess of the approved MSB for General Track Maintenance; representing an over-spend of $0.6m (+12%) in aggregate. This over-spend was attributable to additional Fire and Vegetation Management activities required in response to wet weather.

5.3.4 Signalling and Telecoms

Aurizon Network incurred $2.0m in signalling and telecoms maintenance costs; representing an under-spend of $1.0m (-33%) in aggregate when compared to the approved MSB. It should be noted that all required maintenance tasks were completed, with the costs incurred being similar to FY21.

[3] The asset management plans and strategies are derived from Aurizon Network's Asset Maintenance and Renewal Policy, which in turn is the manifestation of Aurizon Network's practical application of the Safety Management System.

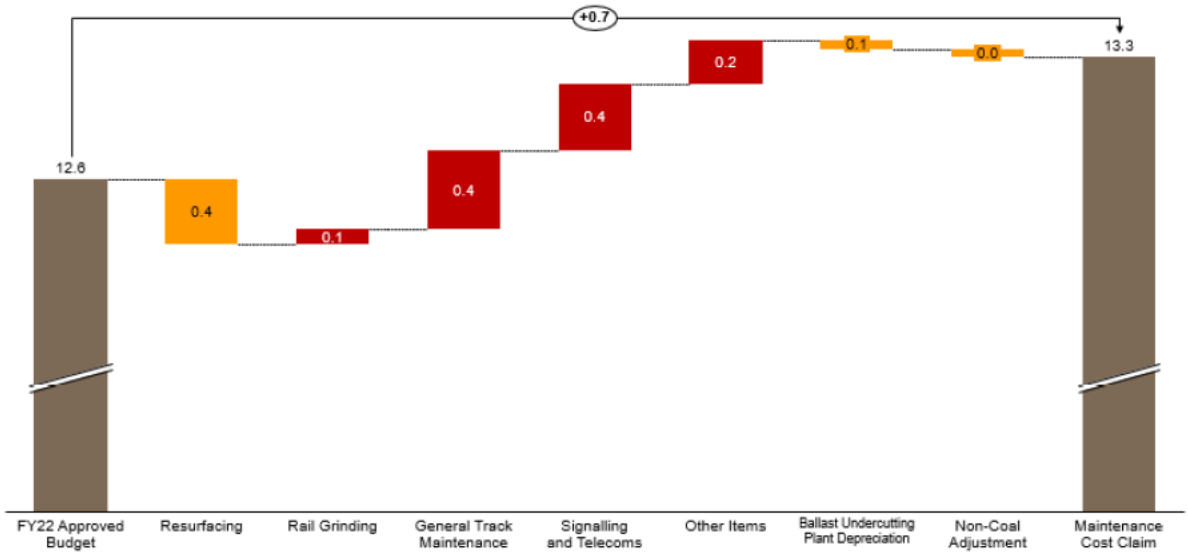
6. Newlands System and GAPE Maintenance Costs Claim

This section outlines the actual Direct Maintenance Costs that Aurizon Network incurred during FY22 in delivering Maintenance Work in the Newlands System and GAPE.

6.1 Direct Maintenance Cost Performance

Aurizon Network submits for QCA approval, a Maintenance Cost Claim of $13.3m, which in aggregate is $0.7m higher than the approved maintenance budget of $12.6m for this Coal System. This variance was driven by additional General Track Maintenance and Signalling and Telecoms costs, which were partially offset by lower resurfacing costs.

Figure 4 Newlands System and GAPE Maintenance Costs Incurred ($m)



Aurizon Network has assessed its actual maintenance costs incurred against the Approved MSB, taking into consideration the materiality thresholds specified in UT5, 7A.11.5(f)(ii)(B).

Table 11 Maintenance cost materiality thresholds

Legend:	
Consistent	Variation from Approved MSB is within +/- $2m materiality threshold.
Departed	Variation from Approved MSB exceeds +/- $2m materiality threshold.

The following table outlines whether Aurizon Network has remained consistent with or has departed from the approved MSB. In assessing the Maintenance Costs Claim (as per clause 7A.11.5) for the Newlands System and GAPE, the QCA should have regard to the total maintenance budget in aggregate, as outlined in Table 12 below.

Table 12 Newlands System and GAPE Maintenance Costs – Comparison to Approved Budget ($m)

Maintenance Item ($m)	Maintenance Costs Incurred	Approved Budget	Cost Variance	Consistent or Departed
Resurfacing	**1.3**	**1.7**	**(0.3)**	
Mainline	1.1	1.4		

Maintenance Item ($m)	Maintenance Costs Incurred	Approved Budget	Cost Variance	Consistent or Departed
Turnout	0.2	0.2		
Rail Grinding	**1.7**	**1.6**	**0.1**	
Mainline	[redacted]	[redacted]		
Turnout	[redacted]	[redacted]		
General Track Maintenance	**4.3**	**3.9**	**0.4**	
General Track	4.0	3.6		
Track Recording	0.2	0.2		
Ultrasonic Testing	0.1	0.1		
Signalling and Telecommunications	**3.1**	**2.7**	**0.4**	
Signalling Corrective	1.0	0.6		
Signalling Preventative	1.4	1.5		
Telecoms Corrective	0.0	0.1		
Telecoms Preventative	0.6	0.5		
Other Items	**2.6**	**2.4**	**0.2**	
Structures and Facilities	1.1	1.0		
Trackside Systems	0.2	0.2		
Other Civil Maintenance	0.2	0.2		
Other General Maintenance	1.0	1.0		
Sub-Total	**13.0**	**12.3**	**0.8**	
Ballast Undercutting Plant Depreciation	0.3	0.3	(0.0)	
Non-Coal Adjustment	(0.0)	--	(0.0)	
Maintenance Cost Claim	**13.3**	**12.6**	**0.7**	

6.2 Allocation of costs between Newlands and GAPE

Consistent with the approach outlined in the FY22 MSB, Aurizon Network has allocated the Maintenance Cost Claim between the Newlands System and GAPE in proportion to the respective GTK for Newlands and GAPE Train Services. GTK for GAPE Train Services is measured from North Goonyella Junction to Abbot Point. This results in the following outcomes:

Table 13 Maintenance Cost Allocation to Newlands and GAPE

System	FY22 MRSB	Maintenance Costs Incurred	Non-Coal Adjustment	Maintenance Cost Claim
Newlands	3.8	4.0	(0.01)	**4.0**
GAPE	8.8	9.3	(0.03)	**9.2**
Total	**12.6**	**13.3**	**(0.04)**	**13.2**

6.3 Scope of Maintenance Work Undertaken

This section outlines the scope of Maintenance Work undertaken in the Newlands System and GAPE during FY22.

Table 14 Newlands System and GAPE Scope Delivered

Maintenance Item	Scope Delivered	RIG Approved Scope	Scope Variance	% Variance
Resurfacing				
- *Mainline*	190	188	2	1%
- *Turnout*	21	21	--	0%
Rail Grinding				
- *Mainline*	[redacted]	[redacted]	[redacted]	[redacted]
- *Turnout*	[redacted]	[redacted]	[redacted]	[redacted]
General Track Maintenance				
- *Track Recording*	627	521	106	20%
- *Ultrasonic Testing*	1,123	915	208	23%

6.4 Commentary on annual performance for Maintenance Items

Aurizon Network has delivered Maintenance Work in the Newlands System and GAPE in a manner that is consistent with its legislative and regulatory obligations. By giving effect to the asset management plans and strategies[4] that underpinned the approved MSB, Aurizon Network has ensured compliance with these obligations.

There are no categories of maintenance within Aurizon Network's Maintenance Costs Claim for the Newlands System and GAPE, with a difference in a material respect when compared to the corresponding item in the approved MSB. Consequently, Aurizon Network considers that the QCA should approve the Newlands Maintenance Costs Claim.

Aurizon Network has provided some commentary on specific maintenance categories below.

6.4.1 Resurfacing

The resurfacing scope of works delivered was materially in line with the approved MSB.

- Mainline resurfacing was higher than the approved MSB with 190km completed. This represents an additional 2km (+1%); and
- Turnout resurfacing was in line with the approved MSB with 21 turnouts completed.

Aurizon Network delivered the resurfacing scope for $1.3m, which was $0.3m (-21%) lower than the approved MSB. These savings were attributable to the majority of scope being planned and executed within system and branch closures providing the team with dedicated and guaranteed track access allowing the scope to be completed in less time and at a lower cost.

[4] The asset management plans and strategies are derived from Aurizon Network's Asset Maintenance and Renewal Policy, which in turn is the manifestation of Aurizon Network's practical application of the Safety Management System.

6.4.2 Rail Grinding

The scope of rail grinding works delivered was materially in line with the approved MSB.

- [redacted]km of mainline rail grinding was completed; [redacted]km ([redacted]) less than the approved MSB; and
- rail grinding was completed on [redacted] turnouts; [redacted] more ([redacted]) than the approved MSB.

Total rail grinding costs incurred were $0.1m higher than budget.

6.4.3 General Track Maintenance

Aurizon Network incurred costs in excess of the approved MSB for General Track Maintenance; representing an over-spend of $0.4m (+11%) in aggregate. This over-spend was attributable to additional Fire and Vegetation Management activities required in response to wet weather and track inspection activities.

6.4.4 Signalling and Telecoms

Aurizon Network incurred $3.1m in signalling and telecoms maintenance costs; representing an over-spend of $0.4m (13%) in aggregate when compared to the approved MSB. The increased expenditure was driven by the impact of significant wet weather causing an increase in corrective maintenance activities.

7. Consistency with the Maintenance Objectives

Operational performance outcomes are determined by a range of inter-related factors. An effective and efficient maintenance regime is a key enabler for operational performance. In delivering maintenance and asset renewal activity in each Coal System, Aurizon Network has had regard to the Maintenance Objectives outlined in Clause 7A.11.1. Specifically, Aurizon Network has:

- sought to ensure that Committed Capacity is delivered;
- appropriately balanced cost, reliability, and performance of the Rail Infrastructure; and
- wherever reasonably possible, coordinated outages with other Supply Chain Participants with a view to maximising throughput.

Table 15 provides examples to illustrate how Aurizon Network is seeking to promote the Maintenance Objectives in each Coal System. Please note that some of the examples outlined below are relevant to multiple Coal Systems.

Table 15 Examples of Aurizon Network's actions to promote the Maintenance Objectives

System	Example
Blackwater and Goonyella	• Best Mean Fit (BMF) Minimum Scope Review - A minimum overhead line track geometry alignment scope was reviewed and reset to allow overhead line adjustments to be made only when exceeding the allowable safety tolerances. This has enabled a reduction of overhead line adjustments, therefore reducing possession times to undertake this work. • Ultrasonic Testing - A risk-based approach was undertaken to review the annual ultrasonic testing program, resulting in the testing frequency reduction on specific areas on the network. The reduction in frequency allows this time to be utilised by train services.
Moura	• During the year, Aurizon Network worked with End Users to align required network maintenance tasks with closures at mine loadouts. The alignment of outages helps to preserve deliverable network capacity and facilitates the timely execution of required works that would normally have to wait until one of 2 annual Moura System Closures.
Newlands / GAPE	• Aurizon Network worked with Abbott Point Coal Terminal to align port in-loader maintenance activities that were planned in the first half of FY22. These works were aligned with train load out outages, so as to retain railing options for mines.

To support the QCA's prudency and efficiency assessment of maintenance costs, Aurizon Network has provided a summary of key operational performance data. The intent of providing this information is to illustrate how Aurizon Network's maintenance performance is helping to realise the Maintenance Objectives.

7.1 Below Rail Cancellations

Below rail cancellation trends provide an indication of how the network's performance impacts train operations. They can also be an early indicator of whether the maintenance and renewals investment is set at the right level.

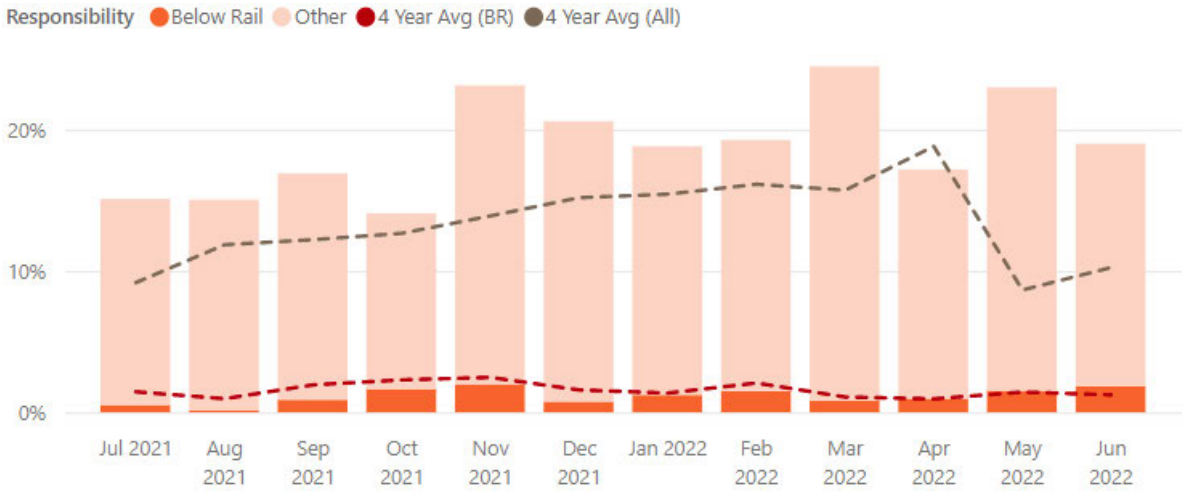
Below rail cancellations during FY22 generally increased in all systems relative to FY21, as illustrated in Table 16 below. Aurizon Network notes that unseasonal wet weather has been a key contributing factor to this deterioration.

Table 16 Below Rail Cancellation % - FY22 vs FY21

System	FY22	FY21	Variance
Blackwater	1.1%	1.1%	--
Goonyella	**2.6%**	2.1%	▲
Moura	**4.6%**	1.4%	▲
Newlands / GAPE	**1.8%**	0.7%	▲

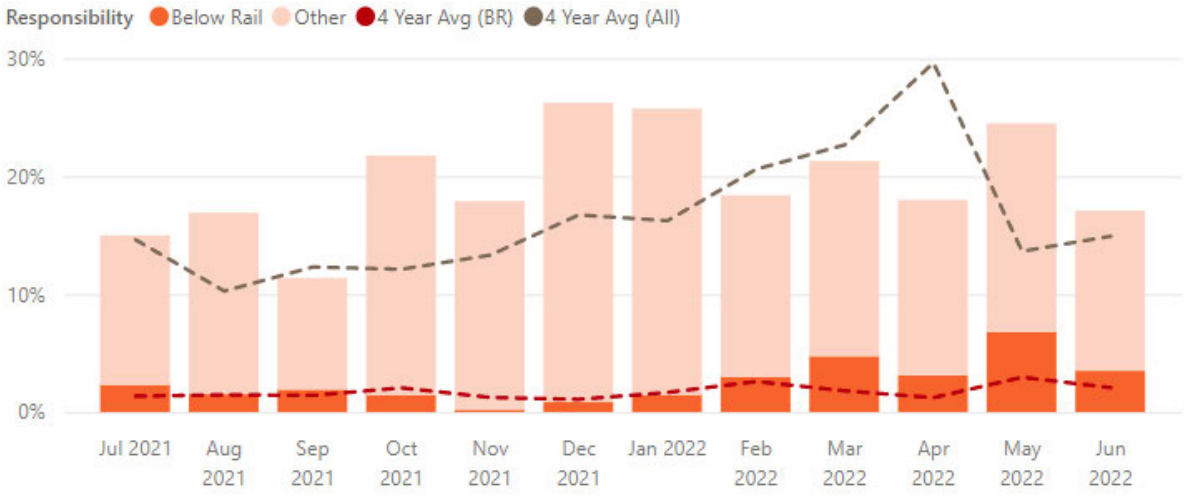
The graphs below illustrate below rail cancellations, expressed as a proportion of agreed services, for the last 12 months. Below rail cancellations consistently represent a low proportion of overall cancellations.

Figure 5 Blackwater System – Cancellations as a proportion of Agreed Services



Below rail cancellation performance for the Blackwater System was in line with the prior year. Unseasonal wet and cold weather influenced cancellation outcomes, by exacerbating the impacts of mudholes, and contributing to other faults including points failures and broken rails.

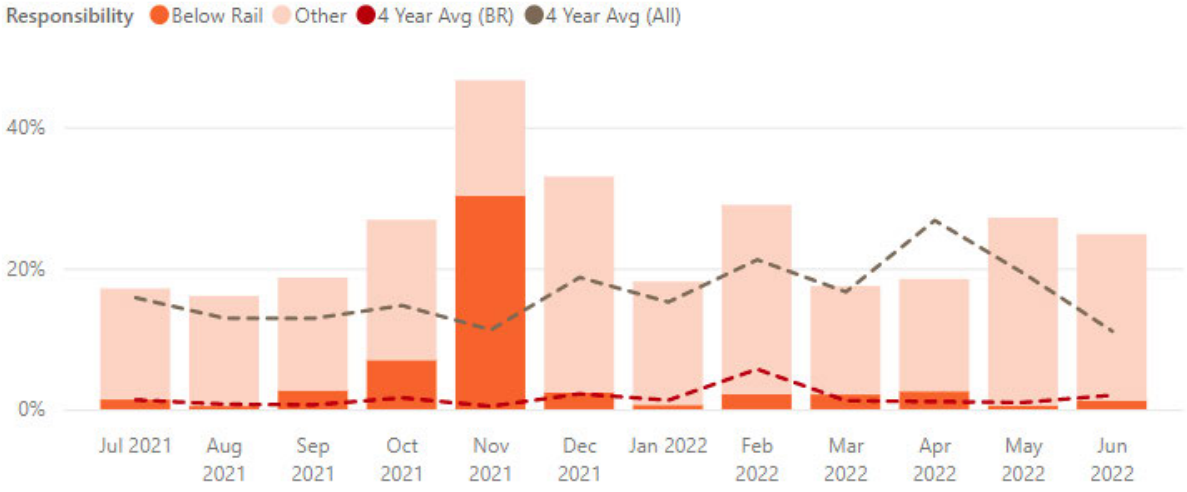
Figure 6 Goonyella System – Cancellations as a proportion of Agreed Services



Below rail cancellation performance for the Goonyella System was impacted by unseasonal wet and cold weather which had an influence on cancellation outcomes. During FY22 Q4, unseasonal rain

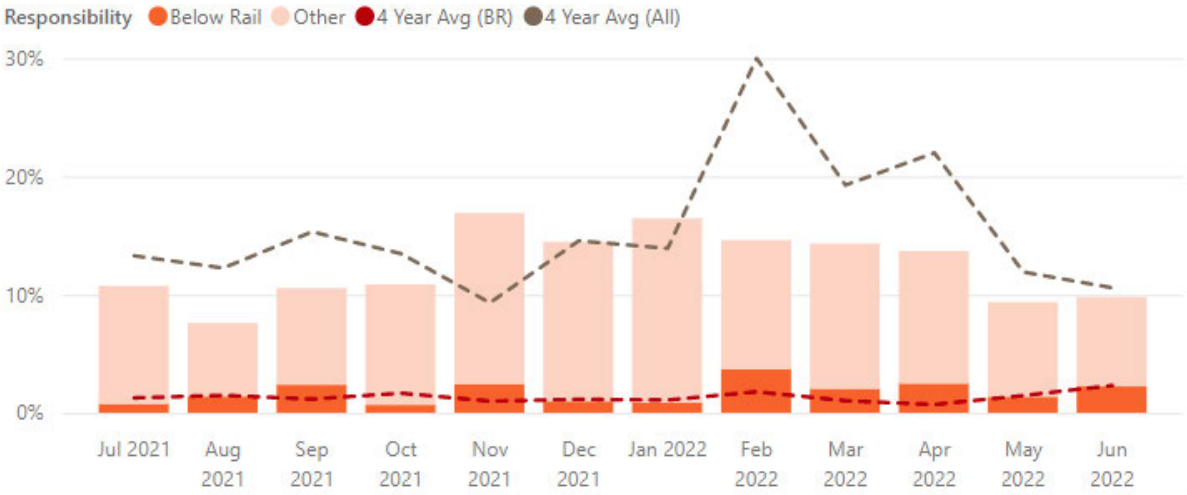
caused the rapid deterioration of the mudholes and cancelled track possessions. The cold and unseasonal wet weather also caused a broken rail, OHLE damage, telemetry failures and points failures, contributing to the increase in below rail cancellations.

Figure 7 - Moura System – Cancellations as a proportion of Agreed Services



Below rail cancellation performance for the Moura System in FY22 was primarily driven by the derailment between Dumgree and Mt Rainbow on 30th October 2021. The recovery effort was hampered by limited access due to the location of the derailment and wet weather which increased delays and cancellations. The track was handed back and reopened for operation with temporary speed restrictions applied on the 11 November 2021.

Figure 8 – Newlands System and GAPE – Cancellations as a proportion of Agreed Services



Below rail cancellation performance for the Newlands System was driven by track geometry defects in FY22 Q3, and in FY22 Q4, by unseasonal wet weather, which contributed to broken rails, points failures and telemetry failures.

7.2 Temporary Speed Restrictions

A Temporary Speed Restriction (**TSR**) is an operational control used to ensure continuity of safe operations where the rail infrastructure is impacted by a fault, defect, incident or where the risk of a defect / fault is exacerbated due to environmental factors (for example, temperature related rail stress). A TSR allows train services to keep running, albeit at a reduced speed, until such time as the fault or defect can be rectified in a planned manner, or where the risk reduces.

Given the impact that speed restrictions have on train cycle times, network congestion and useable capacity in a Coal System, one of Aurizon Network's asset management strategies is to focus on the removal of speed restrictions applied in critical locations and/or those which have a high impact. In practice, this means that Aurizon Network would prioritise the rectification of the underlying fault, defect or incident which in turn, allows the TSR to be lifted. This maintenance practice should see a reduction in delays due to reliability and track defects and provide increased operational recovery options through improvements in train cycle times.

Aurizon Network's performance is illustrated below through a comparison of TSR delay minutes year on year. To normalise the results across individual Coal Systems, TSR Delay Minutes are expressed in "minutes per 100 train kilometres" within Table 17.

Table 17 TSR Delay Minutes per 100 Train Km - FY22 vs FY21

System	FY22	FY21	Variance
Blackwater	**5.46**	6.54	▼
Goonyella	**4.59**	6.03	▼
Moura	**10.19**	10.98	▼
Newlands / GAPE	**3.84**	2.10	▲

Aurizon Network saw an improvement (reduction) in TSR delay minutes in the Blackwater, Goonyella and Moura Coal Systems. TSR delay minute performance in Newlands was adversely impacted by factors including wet weather in Q3.

7.3 Overall Track Condition Index

The OTCI provides an indicator of overall track quality for each coal system by measuring track geometry variation over time. The index is calculated from data captured by track recording vehicles and is used to monitor trends in track condition. An OTCI that is trending downwards is indicative of improving track quality. Conversely, an OTCI that is trending upwards may indicate that the track condition is either deteriorating or is being managed in a way that is 'fit for purpose' as determined by the Rail Infrastructure Manager.

Table 18 Average OTCI - FY22 vs FY21

System	FY22	FY21	Variance
Blackwater	**21.5**	23.9	▼
Goonyella	**21.0**	22.3	▼
Moura	**25.0**	26.6	▼
Newlands / GAPE	**18.3**	20.0	▼

OTCI across all Coal Systems improved during FY22. Aurizon Network has attributed this to targeted maintenance and renewal works to address areas of poor ballast and formation condition. Prior to and

in preparation for the wet season, works were completed in FY22 Q1/Q2 and reflected in the Track Recording Runs in October/November 2021, resulting in an improvement in OTCI.

During the wet weather in FY22 Q3 and Q4 and between Track Recording Runs, which occur every 6 months, there were instances where Aurizon Network had to cancel closures and rely on TSRs to manage the deteriorating ballast and formation conditions that were programmed for renewal in each system. Closures to rectify deteriorated ballast and formation conditions were completed prior to the Track Recording Run resulting in the OTCI being maintained or improved. As a consequence, the OTCI was not impacted by the wet weather as the required works were completed to restore asset condition, track geometry and remove imposed temporary speed restrictions before the Track and Overhead Geometry runs occur.

The OTCI is a metric indicating the Overall Track Condition for the whole system and therefore localised issues managed by TSRs may not significantly impact the metric.

7.4 Initial Capacity Assessment Report

At the time of this submission, Transitional Arrangements associated with the Independent Expert's Initial Capacity Assessment Report (**ICAR**) have not yet been finalised. The consultation between Aurizon Network, End Users, Customers, Access Holders and Train Operators may determine that the most effective and efficient way of addressing the Existing Capacity Deficit is for Aurizon Network to make changes to the Rail Infrastructure or the operation and maintenance practices for the Rail Infrastructure in a Coal System. Consequently, it should be noted that any final Transitional Arrangements may impact future maintenance cost and scope performance, including system health and reliability trends.

8. Procurement Strategy and Methodology

In undertaking Maintenance Work during FY22, Aurizon Network has endeavoured to procure resources in an effective and efficient manner; an outcome that was supported through the execution of the procurement strategy and methodology outlined within the Approved MRSB for FY22. This approach saw Aurizon Network seek to maximise utilisation of its internal delivery teams and augment these internal resources with suitably qualified contractor staff and plant where additional resources were required to complete identified scope.

Aurizon Network applies an assurance program and a performance-based governance framework for external contractors to ensure they meet the required business and safety processes and policies. When engaging external resources, Aurizon Network utilised, wherever reasonably possible, a series of engineering and technical service contractor panels, established through its Enterprise Procurement group. These include asset-specific service panels, skilled labour hire, plant hire and plant transportation services. Where scope required a specific skill set or if the required plant was not held within the Aurizon group, Aurizon Network sought to engage pre-qualified contractors to perform work either under direct supervision or if approved, as a principal contractor for short periods.

COVID-19 continued to have an impact on some maintenance activities items through factors such as supply constraints or longer than usual lead-times. Where appropriate, Aurizon Network has sought to manage the ongoing impact and challenges associated by COVID-19 by increasing timeframes, bringing forward orders, or placing additional orders of items.

Aurizon Network will continue to work with our Customers and internal teams across the Aurizon business to assess existing procurement practices with a view to identifying improvement opportunities that will deliver value to our business and to our Customers.